

REPORT TO CONGRESS II

SEPTEMBER 28, 2000

FOREWORD

This report to Congress, mandated under the National Environmental Education Act of 1990, is a snapshot of environmental education's progress-to-date since the enactment of the law. It is the second in a series offered by the National Environmental Education Advisory Council (NEEAC), the citizen's committee created by this law to assess the status of environmental education and to report on the effects of the Act. The Council is an eleven-member citizen body with diverse representation from across the country, and with a wide range of public and private expertise in environmental education.

The first Report to Congress, released in December 1996, contained several noteworthy policy recommendations. That report was comprehensive and complete and still stands today as an important analysis of the needs and recommendations for the future of environmental education. But, the Council finds that while there is ample evidence that most of those recommendations are indeed being accomplished in some ways, the levels of accomplishment are somewhat inconsistent across grade levels and across states and regions. Thus, the accomplishments seem limited when considered on a national scale.

This report is intended as a supplement to, and update of the 1996 report. It also focuses on more detailed recommendations and outlines specific national strategic initiatives that more clearly chart a course for EE to move forward.

These conclusions are based upon an examination of the status quo of environmental education, compared with a vision of a desired future. By comparing the status quo and the goals for environmental education, the council has determined that the sum of actions prescribed in the recommendations of the 1996 report have lacked the critical mass or momentum to make a significant difference in the overall quality of the national environmental education effort.

The findings and recommendations contained in this report are intended to strengthen environmental education at the national, state, and local levels. It is noted that there are far more detailed and wide-ranging actions that need to take place on various levels to improve and strengthen the national environmental education endeavor. However, one of the key findings is that the overall environmental education effort is currently too diffuse and fragmented to effectively fulfill its crucial role in our society.

With that in mind, the Council has concentrated its attention on a limited number of key initiatives that hold the best opportunity for harnessing the tremendous potential of environmental education. NEEAC recommends these initiatives be implemented in order to focus the diverse array of well-meaning, but largely uncoordinated, efforts into a well-managed strategic course of positive action leading to environmental literacy and better education.

- The National Environmental Education Advisory Council

Section 1. Introduction Environmental Education: Pathway to Citizenship

The challenge of environmental education is to constantly raise the level of environmental literacy.

If we can meet this challenge, we will better enable individuals to assimilate and analyze the complex abundance of data, information, and opinion in making wise choices and decisions as consumers, employees, parents, and voters.

Our Nation's future relies on a well-educated public to be wise stewards of the very environment that sustains us, our families and communities, and future generations. It is environmental education which can best help us as individuals make the complex, conceptual connections between economic prosperity, benefits to society, environmental health and our own well being. Ultimately, the collective wisdom of our citizens, gained through education, will be the most compelling and most successful strategy for environmental management.

Among the responsibilities of the U.S. Environmental Protection Agency are the regulation and enforcement of environmental laws and the dissemination of environmental data and information. The Environmental Protection Agency must also embrace environmental education as an important way to involve citizens in the decision-making process, and to fulfill its role as federal steward of the 1990 National Environmental Education Act.

Sustainable environmental quality, in balance with economic prosperity will be achieved when the nation regards both as a responsibility of citizenship in a free society.

Section 2. Recommendations for Action A Citizens' Committee Call for Action:

Improving the national approach to environmental education

In the ten years since the enactment of the National Environmental Education Act, some definite and positive advancements have been made. A recent Roper survey shows that 96% of Americans want and support environmental education. That level of demand presents a challenge to the environmental education community. The overall national environmental education effort remains far weaker than it should be in terms of adequate funding, coordination and leveraging of resources, and serious evaluation and assessment tools. Environmental education holds great potential for aiding environmental literacy in the United States and the world. In order to capitalize on the support of the American public and to fulfill the tremendous potential of this enterprise, it is crucial that environmental education be nurtured and strengthened.

In this report, by far the most common and overarching theme woven among the Council's findings points to inadequate coordination and financial support for the effort. Time and again, each of the weaknesses identified in the field of environmental education has its roots in a common problem. Although the numerous programs and activities are impressive in their individual missions, they are diffuse and fragmented and therefore fail to reach a "critical mass" capable of achieving overall direction or consistent, definitive accomplishment.

The following recommendations are intended to be more strategic than comprehensive. It is the

finding of the Council that these recommendations need immediate attention and support as national initiatives.

National Initiatives to Improve and Enhance Environmental Education

Recommendation A: **Strengthen national policy regarding environmental education.** [See NEEAC Position Papers: “*Environmental Education and Right-to-Know: We Need Both*” and “*Environmental Education is a Positive, Pro-active Tool for Environmental Compliance.*” Appendix A.]

- Strategies:**
- 1. Reauthorize the 1990 National Environmental Education Act (PL 101- 619) with adequate and consistent annual funding**
 - 2. Revisit specified language and interpretation of the 1990 Act.** For example, some of the language regarding the 25%-75% proportional funding allocations may not represent the optimal distribution of funds at this time. In addition, the designated roles of the National Environmental Education Advisory Council, in the Office of Environmental Education within the Environmental Protection Agency, and of the National Environmental Education and Training Foundation may warrant re-examination and updated definition. Further, as the citizens’ advisory board, the National Environmental Education Advisory Council should be involved in rewrite(s) and re-interpretations of the Act.
 - 3. Strengthen the role of the Environmental Protection Agency as the federal steward of the Environmental Education Act.** The Office of Environmental Education is currently housed within the Office of Communications, Education and Media Relations of the Environmental Protection Agency. The Office of Environmental Education should be removed from this office and a fully staffed, separate office should be established within the Agency in order to integrate all of its environmental education activities.
 - 4. The Federal Environmental Education Task Force should operate effectively, and fully comply with the spirit of the 1990 Act (with the Environmental Protection Agency in a leadership role).**

Recommendation B: **Improve sustainable funding sources for systemic environmental education funding.**

- Strategies:**
- 1. Create a national environmental education trust fund.** Consider numerous and creative alternatives in order to develop a stable, long-term source of funding.
 - 2. Create a block grant program enabling states to support environmental education.**

Recommendation C: Improve and sustain the systemic coordination of environmental education resources at the state level. [See NEEAC Position Paper “Environmental Education Capacity-Building.” Appendix A.]

- Strategies:**
- 1. Supported by national coordination, each state should design and implement systemic planning models for the effective use of environmental education programs and materials**
 - 2. A national environmental education electronic networking, database, and communications system should be expanded.**

Recommendation D: Promote comprehensive environmental education at all levels in the formal education system. [See NEEAC Position Paper “*Environmental Education and Education Reform.*” Appendix A.]

- Strategies:**
- 1. Environmental education concepts and skills should be represented in state academic standards and assessments.** For example, there should be either distinct standards for environmental education as a separate curriculum area, or stated linkages between the concepts and skills of environmental education and those of other curriculum disciplines.
 - 2. Environmental education concepts and skills should be included on exit exams for teacher certification.**
 - 3. The American Association of Higher Education should integrate environmental studies, teacher preparation, education for sustainability, and environmental education.**
 - 4. Efforts should be made to increase participation of K-16 educators in professional development organizations which promote environmental education.**
 - 5. Efforts should be made to increase partnerships among environmental education associations and other professional education associations.**

Recommendation E: Strengthen the evaluation and assessment of environmental education.

- Strategies:**
- 1. Activate the six specific priorities from the Position Paper outlining a national environmental education research agenda.** [See NEEAC Position Paper: “*A Research Agenda for Environmental Education.*” Appendix A.] These priorities include the following:
 - a) Establish a national measure of environmental literacy. This would include nationwide assessments of environmental literacy among K-

16 students, educators, and adults.

- b) Establish a national assessment of the status of environmental education in the U.S.
- c) Assess the relative effectiveness of instructional materials in meeting goals of environmental education and environmental literacy.
- d) Examine the effectiveness of environmental education in accomplishing broader education goals.
- e) Assess the effectiveness of environmental education training for educators in pre-service, in-service, and non-formal education.
- f) Examine the effectiveness of environmental education in meeting environmental protection goals.

- 2. Create a national environmental education accreditation system, based upon the Guidelines for Environmental Education Excellence from the North American Association for Environmental Education, as a quality assurance mechanism for instructional programs and programs in environmental education.**
- 3. Authorize and fund a comprehensive study to determine what relationship exists between environmental education and sustainable economic development.**

Section 3. RATIONALE FOR THE RECOMMENDATIONS

The recommendations in this report are the result of an analysis which focuses on descriptions of the *status quo* and the *desired future* of environmental education. The recommendations are strategies intended to bridge the gap between these two descriptions.

Much has been accomplished through education with regard to learning about and caring for the environment since the first Earth Day in 1970. Two successive Environmental Education Acts since that time have measurably moved the citizenry forward in its collective concern and stewardship of our natural surroundings. Nonetheless, much remains to be done to broaden understanding and foster more informed participation in the resolution of environmental issues that affect every facet of our lives.

There is significant supporting evidence available [See Appendix B] that describes specific accomplishments and precise shortcomings in many areas and at many levels where environmental education is presented, received, and subsequently practiced. Also, the December 1996 Report to Congress is a source of specific information about these issues. However, current environmental education practices call for consideration of four general areas: (1) Leadership and Direction; (2) Perceptions about Environmental Education; (3) Resources/Training; and (4) Environmental Decision-making.

A. Leadership & Direction

A.1 Regarding a national leadership and professional development organization.

Finding the Status Quo	Description of Desire Future
<p>The North American Association for Environmental Education (NAAEE) is an approximately 2500 member organization which exercises some proprietorship over a diverse field of professional and para-professional educators at all levels. Nonetheless, NAAEE's membership and effectiveness of representation does not yet reflect the overwhelming demand and support for environmental education, and has not yet gained the widespread acceptance and "authority" accorded the National Science Teachers Association (NSTA) or the National Council for Social Studies (NCSS), for example.</p> <p>The national environmental education community needs to begin to speak with more authority on pertinent education issues.</p>	<p>This national leadership body must be integrated with the environmental education organizations at the state level. Thus, along with efforts to establish certification standards for environmental educators, the environmental education scheme should begin to resemble that of the other disciplines, enjoying the same type of ascendancy of the aforementioned NCSS or NSTA.</p>

A. 2 Regarding the EPA as federal steward of the Environmental Education Act.

Finding the Status Quo	Description of Desire Future
<p>The Office for Environmental Education in the Environmental Protection Agency has provided a point of reference for many educators by virtue of its funding program, the numerous reference materials it has produced, and the workshops it has conducted. However, the goals of the Office of Environmental Education are far from a priority within the agency, and too often, the agency has difficulty in distinguishing between information and education.</p> <p>It is noted that the first Environmental Education Act placed responsibility for environmental education within the U.S. Department of Education. At first appearance, this might predict a better connection between environmental education and formal educators. However, in practice, environmental education efforts within this Department did not have a national, coordinated focus, and apparently were lost within the larger world of educational concerns. Interagency cooperation has been sorely lacking or minimized by organizational provincialism. This is especially noticeable at the federal level, but is also common at the state and local levels.</p> <p>The results of both Acts, from the standpoint of governmental leadership in the field, have brought attention to the importance of the environment and environmental education without making it part of the fabric of the formal education system.</p> <p>The Environmental Protection Agency is obviously the most readily identifiable agent for environmental stewardship. For that reason alone, it is probably the best place for a national environmental education effort to be centered in terms of the role of government. However, this agency must give a higher priority to environmental education and make more effective use of the information goals of the agency to enhance the education effort. Internal cooperation must be more effective than has been the case in past and current environmental education task forces.</p>	<p>Effective alliances with other agencies must be developed, particularly with the Department of Education and notably with Energy, Interior, and Agriculture. These agencies have much to offer environmental education by virtue of their missions. These connections need to be made in a manner that places the common good above agency "sovereignty."</p>

B. Perceptions about Environmental Education

Finding the Status Quo	Description of Desire Future
<p>There remains a misperception among policymakers, educators, and the general public about just exactly what environmental education is and what it means to all of us. This impedes the development of an understanding of environmental education issues and of environmental literacy.</p> <p>It appears that there is insufficient information regarding education in general and environmental education in particular, or that available data is ineffectively used. These shortcomings lead to misperceptions and biases.</p> <p>Public relations and information regarding the importance of environmental education and a pervasive understanding of the educational issues is sorely lacking.</p> <p>In short, environmental education has a public relations problem.</p> <p>It is necessary that a reasonable definition of environmental education be made available and demonstrable through effective programs. [See the NEEAC position paper, “What is Environmental Education?” Appendix A.]</p>	<p>It needs to be established that environmental education is an enhancement of education that serves the common good by helping an environmentally literate citizenry understand how to protect and preserve our natural surroundings while improving our quality of life.</p> <p>Environmental education must be not only perceived as an economic, social and environmental necessity, but the perception must be widespread and measurable through an on-going environmental literacy assessment.</p>

C. Resources/Training

Finding the Status Quo	Description of Desire Future
<p>When weighing the potential of any educational venture, the resources which are to be considered may include, human resources, capital, print/media materials, and the results of research.</p> <p>The inventory of environmental education resources exists in varying degrees of quantity, quality, availability and potential. Attempts have been, and are being made to establish standards and guidelines for the development, selection, and use of resources.</p> <p>There are too many self-proclaimed environmental educators, certified only by themselves, while few states have certification programs for environmental education.</p> <p>It is uncommon to find administrators (who supervise the work of teachers) who have any environmental background themselves.</p> <p>Training for educators in environmental education has been spotty, although federally-funded programs (such as the National Environmental Education and Training Foundation and Office of Environmental Education grants) have attempted to fill the gap with limited available resources.</p> <p>Funds have been available from private foundations, but their funding parameters are not always in the best interest of high quality environmental education. The overall effect of environmental education funding through these sources promotes a fragmented and uncoordinated effort.</p> <p>Funding under the Environmental Education Act of 1990 has never met appropriated levels. Further, Congress has yet to re-authorize the Act.</p>	<p>Education majors should receive pre-service training in environmental education, and teachers should be exposed to effective environmental education in-service programs.</p> <p>Administrators should become familiar with the goals of environmental education and the essence of the training their teachers are receiving.</p> <p>Research indicates that environmental education can be an effective means of education and environmental improvement. Therefore, environmental education should be increasingly prevalent in school programs and should become a priority across the country.</p> <p>All states should formulate and implement strategic plans for environmental education.</p>

The proliferation of media programs and materials, print resources and computer-generated materials is conflicting, ineffective, confusing, and of variable quality. Environmental education resources of all types should be screened and validated through a set of widely-accepted guidelines for said materials.	
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D. Environmental Decision-making

Finding the Status Quo	Description of Desire Future
<p>Much environmental decision-making is uninformed, based upon inadequate data and on poor research or none at all. It often reflects the biases of the decision-maker. This is particularly true of decisions made in communities at the local, county, and regional level.</p> <p>At the local, state and federal level, agencies dedicated to environmental problem-solving and law enforcement do not always make informed decisions.</p> <p>Based on several Roper studies, the lack of solid foundations for environmental decision-making is evident among the general public, including local planners, representatives of business and industry, and consumers.</p> <p>Resources are too often used indiscriminately, and evaluated inadequately.</p> <p>Successful programs are rarely analyzed, promoted, supported and maintained adequately.</p> <p>The end goal of environmental education is to improve environmental literacy, thus helping citizens better understand their role and their responsibilities in environmental stewardship. In turn, the collective impact of citizens' decisions which affect the environment reflects the overall effectiveness and value of environmental education. Thus...</p>	<p>...research should document if environmental education is an effective means of education and environmental improvement. This would also mean that there is a widely-held view and common understanding of what environmental education is.</p> <p>...there should be research evidence that demonstrates the effect of improved environmental literacy on environmental stewardship.</p> <p>...environmental education should be an educational priority throughout the nation.</p> <p>...comprehensive national environmental education legislation should support training, educational resources development, effective school programs, and state plans.</p> <p>...states' long-range plans should coordinate environmental education efforts within and among states.</p> <p>...environmental education should be embraced as a tool for pro-active citizen involvement in the resolution of environmental</p>

	<p>problems.</p> <p>...the corporate world needs to operate with an understanding of sustainability.</p> <p>...effective environmental education programs must be identified, maintained, and promoted.</p>
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Section 4. Obstacles and Problems addressed by the recommendations.

As is the way with ideals and actualities, there are numerous obstacles which prevent environmental education from moving to a desired future outcome from its present circumstances. The recommendations and strategies offered in this report are based on the following obstacles and problems.

To begin with, there have never been sufficient, reliable resources available to environmental education for the long term. Although there have been two separate instances of national legislation supporting environmental education, Congress has failed to re-authorize the Environmental Education Act of 1990 in numerous legislative sessions.

We also lack a common understanding of the true nature of environmental education, perhaps due to inconsistent quality and episodic delivery. Similarly, it does not appear that the widespread environmental literacy necessary for environmental stewardship has occurred. We have little research evidence or reliable measures of environmental literacy to make that assertion with confidence. It appears that neither the general public nor the corporate world fully realizes or appreciates the link between environmental education and a sustainable economy.

Within the education system, communication and dialogue about environmental education has been lacking among the mix of school boards, administrators, teachers, and paraprofessionals.

Capacity-building at the local and state levels has not reached its full potential. Further, the potential for the roles of the Environmental Protection Agency, the North American Association for Environmental Education, and the National Environmental Education and Training Foundation, and their parallel organizations at the state level has not yet been realized.

Environmental education has not been effectively infused into the educational reform movement, nor has it been institutionalized throughout K-12 or higher education. Thus, environmental education has not achieved the desired impact in government and business circles, or in communities.

The recommendations suggested in this report outline a strategic plan to address these most pressing obstacles and problems that confront environmental education in the United States.

APPENDIX A NEEAC Position Papers

A RESEARCH AGENDA FOR ENVIRONMENTAL EDUCATION

There exist a few landmark studies in environmental education which can be considered significant. However, the scope of research studies tends to be limited both in geography and sample size. Thus, environmental education research tends to reflect an array of researcher concerns and interests, with numerous gaps in what is truly "known" about the field. Adding to the problem - there have been few broadly-based research studies, generally not enough funding, and too few resources devoted to environmental education research.

The National Environmental Education Advisory Council calls for increased research in a number of areas within environmental education. The following reflect critical needs in national research priorities: environmental literacy, the field of environmental education in general, instructional effectiveness and the preparation of environmental educators, and the links between education and environmental protection:

■ A NATIONAL MEASURE OF ENVIRONMENTAL LITERACY IS NEEDED

Although research has been conducted regarding specific aspects of environmental literacy, involving samples of specific populations, not enough is known to generalize across age levels or broad geographic areas. Much environmental education research has focused on environmental attitudes and knowledge, but the scarcity and uneven nature of the research findings have left us with no real "baseline" from which to measure the effect of environmental education. The Council calls for a national research priority which collects data across age groups and populations, and which focuses on a comprehensive model of our nation's level of environmental literacy which goes beyond simple measurements of attitudes, current events awareness, and knowledge of facts. Environmental literacy assessment should include understanding of concepts and assimilation of complex information sets.

■ A NATIONAL ASSESSMENT OF STATUS OF ENVIRONMENTAL EDUCATION WITHIN THE UNITED STATES IS NEEDED

We have no broad picture of environmental education activity in the United States. Educational mandates for environmental education vary across states, as does the environmental education infrastructure, funding, and other resources. Additionally, many traditional disciplines which comprise environmental education provide a variety of "foster homes" for environmental education within formal education. Seldom is environmental education named as a specific subject. Instead EE is described as a part of science education, or social studies, or even language arts. In truth, environmental education includes elements of all the traditional curriculum areas. The very diversity and trans-disciplinary nature of environmental education exacerbates the already difficult task of identifying and describing where environmental education is taught, who teaches it, what resources are used, and where gaps exist. The Council calls for research which answers these basic questions and which provides insight into how environmental education is conducted. Is it provided in episodic and disjointed segments, or is there a long-term commitment to environmental education with a meaningful scope and sequence guiding the selection and delivery of instructional elements? An

additional focus would examine appropriate connections for non-formal educational experiences.

■ **UNDERSTAND THE RELATIVE EFFECTIVENESS OF INSTRUCTIONAL MATERIALS IN MEETING THE GOALS OF ENVIRONMENTAL EDUCATION (AND ENVIRONMENTAL LITERACY)**

There are limited but substantial studies which address the effectiveness of noteworthy environmental education programs, but relatively few have inspected environmental education materials and instruction comprehensively in terms of environmental literacy. Fewer still have addressed the literacy elements of ecological knowledge, socio-political knowledge, cognitive skills, responsible environmental behavior, and other determinants. The Council calls for research which examines environmental education's effectiveness in accomplishing the goals of the field, gathering evidence on the instructional models which hold the greatest promise for accomplishing these important outcomes.

■ **EXAMINE THE EFFECTIVENESS OF ENVIRONMENTAL EDUCATION IN ACCOMPLISHING BROADER EDUCATIONAL GOALS**

Environmental education exists within the larger context of general education for all. These broader educational goals range from life skills (critical thinking, problem solving, verbal and written communication, citizenship), through subject matter skills and content (science, social studies, language arts and mathematics), to scores on achievement tests or state-developed standards-based assessments. The challenge in environmental education is to meet, not only the goals associated with environmental education, but also goals related to those broader educational concerns. The Council calls for a comprehensive examination of environmental education materials, programs and outcomes in terms of broader educational goals.

■ **ASSESS THE EFFECTIVENESS OF ENVIRONMENTAL EDUCATION TRAINING FOR EDUCATORS IN PRE-SERVICE, IN-SERVICE, AND NON-FORMAL EDUCATION, AND DETERMINE WHICH TRAINING MODELS ARE THE MOST EFFECTIVE**

Environmental education incorporates knowledge and skills from a variety of subject areas and those who practice environmental education are called upon to reflect a breadth and depth of preparation not always present in more traditional educational endeavors. The Council calls for assessment which includes the educators themselves, in terms of their own knowledge, skills, and behaviors. Additional research should measure the outcomes of training in the workplaces of these educators, whether in classrooms, outdoor programs, zoo and museum programs, or other educational venues.

■ **EXAMINE THE EFFECTIVENESS OF ENVIRONMENTAL EDUCATION IN MEETING ENVIRONMENTAL PROTECTION GOALS**

Although regulation and enforcement are effective management tools for large groups of collective behaviors, many interactions between humans and the environment are individually determined and unregulated. Environmental education has a role in enhancing critical-thinking and problem-solving skills which enable individuals to access and evaluate information and to weigh various perspectives on issues in order to make informed and responsible decisions related to the environment. Thus, the

Council calls for research which examines the link between educational efforts and citizen participation with respect to the environment.

WHAT IS ENVIRONMENTAL EDUCATION?

There has been a rash of criticism regarding environmental education (EE) during the past several years. The National Environmental Education Advisory Council (NEEAC) believes that too many of the criticisms rely on broad generalizations and misrepresentations. The Council has therefore determined it is important to reiterate and reinforce basic points about the goals and components of environmental education.

In its infancy environmental education was viewed as a learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address these challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1978). Environmental education assists citizens in understanding and participating in complex environmental issues in their communities. Environmental education enhances critical thinking, problem solving and effective decision-making skills and enables individuals to weigh various sides of an environmental issues to make informed and responsible decisions (Federal Register, 1996).

To clarify the relationship between knowledge, skills, and action embodied in the above definition, educators have developed a framework that stresses a hierarchical approach to environmental literacy. This framework includes four major goals to guide educators:

- Ecological concepts
- Conceptual awareness
- Issue investigation and evaluation
- Environmental action skills.

The ECOLOGICAL CONCEPTS goal is foundational to environmental education. The intent of this goal is to enable individuals to gain an understanding of the natural world and to base the decision making process upon facts and models available through the biological and geophysical sciences. Scientifically-derived data and understandings are crucial to ecologically-sound decisions.

The CONCEPTUAL AWARENESS goal builds upon ecological and scientific knowledge by making connections to economic and social understandings. This goal addresses the conceptual understanding of the interactions between the processes of nature and the processes of human endeavor. Environmental education purposely explores, cuts across, and blends traditional curriculum disciplines such as science, social studies, and economics. In this way, the learner understands how his or her individual behavior and societal behaviors impact the environment.

The ISSUE INVESTIGATION AND EVALUATION goal helps individuals develop the knowledge and skills to investigate environmental issues and evaluate solutions for remediating them. These "critical thinking" skills are a cornerstone of environmental education. The intent of this goal is to allow an individual learner to analyze and gather information on environmental issues, including ecological and social dimensions, and evaluate both issues and solutions. These are important elements

for decision-making and citizenship.

The ENVIRONMENTAL ACTION SKILLS goal helps individuals develop skills for taking responsible action, both personally and as members of a community, to help resolve environmental issues. The intent of this goal is to motivate the learner to "go beyond" simply thinking about or being aware of a given issue, and to take on personal responsibility toward the resolution of the problem. This goal seeks to empower the individual to use responsible and positive actions for helping resolve environmental issues, and to accomplish the empowerment without advocating a particular viewpoint or side. This form of citizenship is crucial to our democracy, and thus an important skill to learn. It should be noted that a basic tenet of environmental education stresses teaching "how to think" about the environment, instead of "what to think." Advocating a particular side of an issue to learners is a form of political action, not a valid process of environmental education.

The framework for achieving these four goals in environmental education is designed around the seven components of "environmental literacy", as defined in the professional and research literature. These are:

- AFFECT -- includes environmental sensitivity and other factors which allow individuals to reflect on environmental problems/issues and to act on them if necessary.
- ECOLOGICAL KNOWLEDGE -- includes the knowledge of major ecological concepts, and an understanding of how natural systems work. Also important is a knowledge and understanding of how natural systems interface with social systems.
- SOCIO-POLITICAL KNOWLEDGE -- includes an understanding of the relationship between beliefs, political systems, and environmental values of various cultures. Socio-political knowledge includes an understanding of how human cultural activities (e.g., religious, economic, political, social and other) influence the environment from an ecological perspective.
Also included within this category is knowledge related to citizen participation in issue resolution.
- KNOWLEDGE OF ENVIRONMENTAL ISSUES -- includes an understanding of environmental issues and problems caused as the result of human interaction with the environment. Also included within this category is knowledge related to alternative solutions to issues.
- COGNITIVE SKILLS -- include those abilities required to analyze, synthesize, and evaluate information about environmental problems/issues and to evaluate a select problem/issue on the basis of evidence and personal values. This category also includes those abilities necessary for selecting appropriate action strategies, and for creating, evaluating, and implementing an action plan.
- INDIVIDUAL PERSONAL RESPONSIBILITY -- includes taking actions as they relate to personal behaviors and re-examining personal beliefs and values.

- ENVIRONMENTALLY RESPONSIBLE BEHAVIORS -- include active and considered participation aimed at solving problems and resolving issues. Categories of environmentally responsible actions are persuasion, consumer action, eco-management (physical action), political action, and legal action.

The National Environmental Education Advisory Council has reviewed these goals and basic characteristics of environmental education, and endorses the preceding guidelines with respect to the environmental education process.

ENVIRONMENTAL EDUCATION AND RIGHT-TO-KNOW: WE NEED BOTH

Drawing a distinction between the education and information dissemination processes, the National Environmental Education Advisory Council is suggesting a companion strategy to EPA's Right-to-Know policy. "It is the position of the Council that good citizenship demands that the public has a 'right to know' and access to environmental protection data, but also a 'responsibility to understand' the implications of the information once it is provided," says Mike Way, chair of NEEAC. "We believe environmental education is the pathway to that understanding."

One of the most positive trends of recent years has been the public's ability to easily access data about the risk factors they face from environmental pollution. The Emergency Planning and Community Right-to-Know Act (EPCRA) mandates that this information be readily available to the public. Hailed as one of the most potent pieces of environmental legislation in many years, EPCRA's primary purpose is to inform communities and citizens about the chemical hazards in their neighborhoods. Right-to-know tools such as the Toxic Release Inventory (TRI) have been the basis for dramatic success stories in environmental protection. Yet, while data can be a valuable tool that functions as a red flag, alerting citizens to environmental dangers, the Council believes it is only the beginning of sustainable environmental and economic development.

Environmental education provides the knowledge and skills to understand stewardship and encourage active participation in environmental protection. Environmental education creates citizens who are environmentally-literate, who can take data and make sense of it. Data supports and sometimes suggests specific courses or options, but environmental literacy allows for discussion of the options, leading to community-based decision-making by connecting like-minded individuals. More common understanding through education enables citizens to form relationships with one another and provides a framework to develop community-based solutions. Thus the need for litigation as the preferred course-of-action can be de-emphasized when problems or issues arise.

In order to fulfill our potential as environmental stewards, we certainly need verifiable sources of information. Our families, our communities, our nation, and our world need both Right-To-Know data programs and environmental education programs working together, consistently and cooperatively, in order to achieve a healthy population and a healthy environment. NEEAC recommends that all environmental protection agencies, especially the U.S. Environmental Protection Agency, strengthen their efforts by fully integrating environmental education throughout agency programs.

ENVIRONMENTAL EDUCATION AND EDUCATIONAL REFORM

In the United States, numerous local, state, and national education reform efforts, which seek to improve student learning, are underway. The National Environmental Education Advisory Council believes that additional progress can be made in reaching various education reform goals by using environmental education as a vehicle for learning. Environmental education can be an effective tool for achieving such goals because many of the characteristics of reform are also characteristics of quality environmental education.

Educational reform emphasizes the importance of curriculum and instructional methods that are learner-centered, use interdisciplinary approaches to learning, promote inquiry, critical thinking and problem solving skills, use team building and group decision-making, and link learning to practical applications in the real world. Environmental education is a learning process that begins with public awareness and knowledge about the total environment and develops the critical thinking and problem solving skills needed to make informed and responsible decisions that impact the environment. Well constructed environmental education programs are learner-centered, providing students with opportunities to construct their own understanding through hands-on, minds-on investigations. Learners engage in direct experiences and are challenged to use higher order thinking skills. Moreover, environmental education can support the development of an active learning community where learners share ideas, expertise, and prompt continued inquiry.

Educational reform calls for the development of rigorous content and performance standards which identify what students need to know and what skills they need to attain in core subject areas such as science, math, social studies, and language arts. The National Guidelines for Environmental Education (NAAEE, 1998) provides a set of standards for the field, and identifies consistencies between environmental education standards and those in the content areas. Environmental Education draws on content and skills in other areas and can be utilized as a real-world application of learning in each area. Moreover, since environmental topics are of high interest to young learners, environmental education comprises a strong motivational tool to capture and hold the attention of learners. Environmental education also has the potential to link to the K-12 curriculum (i.e., science with math, etc.), providing the opportunity to meet the requirements of the core disciplines while creating a comprehensive and cohesive course of study.

Educational reform also calls for assessments of student learning and a realignment of curriculum and instruction to the new standards and assessment systems. And, it calls for reorganizing schools to redefine student-teacher-parental community relationships. Through its emphasis on real-life concerns, environmental education promotes authentic assessment. Through its emphasis on community health and environmental issues, environmental education is also ideal for the promotion of strong and active student-teacher-parental community relationships.

The Council calls on schools and school districts, local, state and federal agencies, non-profit organizations, education associations, parents, and others striving to improve education to explore ways in which environmental education can be used to advance their own education reform goals. We advocate the use of environmental education in all appropriate learning situations.

ENVIRONMENTAL EDUCATION CAPACITY-BUILDING

After twenty years of designing and developing environmental education programs, a second major trend in the evolution of environmental education has emerged. Labeled "capacity-building", it is not so much a process nor an end result, but a family of activities, communication networks, infrastructure, and support services. All are strategies designed to enhance the continued development and delivery of high-quality environmental education by leveraging resources and helping develop a support web of people and organizations at the national, state, and local levels.

Environmental education capacity-building is important because it relies on the simple logic of doing things smarter and better, not simply working harder. Capacity-building is about maximizing efficiency, enhancing quality, sharing and leveraging scarce resources, and improving communications.

Typical environmental education capacity-building activities include the development of a statewide environmental education master plan; coordinating statewide annual conferences and other professional development events; formal coordination of the states' environmental education community, development and sharing of information clearinghouses; links to formal education; and leadership and organizational development.

EPA has recognized the importance of building environmental education capacity at the state level and as a national strategic priority. Through a national educator training program, called the Environmental Education and Training Partnership, EPA is providing leadership and financial support for a program which has made capacity building one of its essential components. EPA is also "strengthening or improving" existing programs and building partnerships rather than "creating" more environmental education programs and curriculum.

Early support for capacity building has come from the North American Association for Environmental Education, which has made room for a national partnership of state environmental education organizations known as the "Affiliates Partnership." The National Environmental Education Advancement Project, run by the University of Wisconsin, Stevens Point, has specialized in state environmental education capacity-building during the past six years by researching, analyzing, charting progress, collecting and sharing strategies, and providing training support for state organizations. As partners in EPA's training program these efforts have received important resources to help strengthen and sustain their capacity building efforts.

The National Environmental Education Advisory Council calls for continued and increased support for environmental education capacity-building as part of a national strategy for developing quality environmental education programs. The focus on capacity-building enhances the opportunity to

develop a nationwide systemic initiative which promotes environmental literacy. The 2000 Council re-emphasizes the National Environmental Education Report to Congress of 1996 which addressed the importance of capacity-building in six of the eight recommendations.

NEEAC recommends that environmental education capacity-building be given a top priority in EPA's EE grant program at the regional and national levels. Internally, EPA offices should support environmental education capacity-building activities at the community, state, regional, and national levels. EPA should explore working partnerships with state and national EE networking associations.

ENVIRONMENTAL EDUCATION IS A POSITIVE, PRO-ACTIVE TOOL FOR ENVIRONMENTAL COMPLIANCE

In the 1970s and 1980s, the largest source of pollution in this country was "point-source" pollution from industrial deposit of toxics into the air, water and ground. Environmental laws and regulations were, and remain, powerful tools for the reduction of point-source pollution. So successful have these regulations been, in fact, that big business/industry is no longer the primary source of pollution in the country. Additionally, industry has embraced "pollution prevention" as a way to eliminate the need for end-of-pipe solutions, further reducing its contribution to the pollution problems. The National Environmental Education Advisory Council believes that the era of relatively easy environmental cleanup is behind us, and recommends using environmental education to help achieve voluntary compliance. The Council views environmental education as a companion tool to regulation and enforcement when targeted to the individual, the household, and small- and medium-sized business and industries.

Research shows that the largest source of pollution today is "non-point source" pollution caused by the collective behavior of individual citizens. Reliance on our cars, insistence on perfectly shaped fruits and vegetables, and rejection of environmentally-responsible behavior that inconveniences us in any way are all contributing to a serious degradation of human and environmental health. Regulations represent the lowest level of the public's commitment to a quality environment. A more worthy goal is voluntary environmental compliance with the ultimate goal of environmental stewardship. We need a more sustainable and higher level of commitment from our citizens to secure and maintain our collective environmental, economic and physical health. This level of commitment carries with it the willingness to become informed about environmental and health issues at the local communities, regional, state, national, and international level. It also demands the ability to weigh and evaluate alternative solutions and the willingness to engage in discourse with others of both like and unlike minds, in order to reach agreement on issue resolutions. Environmental education has as its central mission the development of such an active citizenry.

Environmental education is a positive, effective and pro-active tool for stewardship. The major goal of environmental education has long been to develop citizens who are aware of and concerned about the environment and have the knowledge, skills, attitudes and commitment to work individually and together toward solutions to past, present and future environmental issues.⁽¹⁾ Future economic growth is closely linked to sustaining the quality of the environment and will be the driving force in the 21st century. The Council believes that citizens can and should be a part of this debate over the environment and the economy; their participation requires a level of knowledge that environmental education can provide.

The Council recommends that environmental education be considered equally important to regulation and enforcement as major avenues for the remediation and maintenance of a healthy environment. State and federal environmental protection agencies need to give environmental education a greater role in their efforts to promote environmental stewardship and economic sustainability and to include environmental education in their mission statements. The effectiveness of environmental education should be documented through a process of pre- and post-testing; effective projects could then serve as national and state models of excellence.

¹. Adopted from the Belgrade Charter (UNESCO-UNEP, 1976)

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